

**PRINTER RUSH**  
(PTO ASSISTANCE)

Application : 09700448 Examiner : Nathaniel GAU : 2614  
From : J. Black Location : (IDC) FMF FDC Date : 1/18/05  
Tracking # : epm09700448 Week Date : 12/12/05

DOC CODE	DOC DATE	MISCELLANEOUS
<input type="checkbox"/> 1449		<input checked="" type="checkbox"/> Continuing Data
<input type="checkbox"/> IDS		<input type="checkbox"/> Foreign Priority
<input type="checkbox"/> CLM		<input type="checkbox"/> Document Legibility
<input type="checkbox"/> IIFW		<input type="checkbox"/> Fees
<input type="checkbox"/> SRFW		<input type="checkbox"/> Other
<input type="checkbox"/> DRW		
<input type="checkbox"/> OATH		
<input type="checkbox"/> 312		
<input type="checkbox"/> SPEC		

**[RUSH] MESSAGE:**

Provisional application no 60/015064 60/089882  
60/103470 and 60/104638 are listed on palm/bib  
sheet as continuing data, but not in specification.  
Please update specification to be to match palm/bib  
sheet.

Thank you!

**[XRUSH] RESPONSE:**

*[Signature]*

**INITIALS:** *[Signature]*

NOTE: This form will be included as part of the official USPTO record, with the Response document coded as XRUSH.

REV 10/04



SAMS091P

12/PRTS

09/700448  
528 Rec'd PCT/PTO 09 NOV 2000

**DTV SIGNAL WITH GCR COMPONENTS IN PLURAL-DATA-SEGMENT  
FRAME HEADERS AND RECEIVER APPARATUS FOR  
SUCH SIGNAL**

The invention relates to ghost-cancellation circuitry in television receivers and to reference signals included in transmitted television signals for facilitating such ghost-cancellation.

**BACKGROUND OF THE INVENTION**

Distortion in the baseband signals recovered by a receiver caused by multi-path reception is a problem in digital television (DTV) transmissions as well as in NTSC analog television transmissions, although the distortion is not seen as ghost images by the viewer of the image televised by DTV. Rather the distortion causes errors in the data-slicing procedures used to convert symbol coding to binary code groups. If these errors are too frequent in nature, the error correction capabilities of the DTV receiver are overwhelmed, and there is catastrophic failure in the television image. If such catastrophic failure occurs infrequently, it can be masked to some extent by freezing the good TV images most recently transmitted, such masking being less satisfactory if the TV images contain considerable motion content. DTV receivers use adaptive equalizers to suppress the distortion caused by multipath reception, which equalizers are similar to those previously used in some NTSC television receivers. The adaptive equalizers are digital filters with kernel weights that can be adjusted by suitable electronics to reduce multi-path signals known as "pre-ghosts" that are received before the principal signal is received and to reduce multi-path signals known as "post-ghosts" that are received after the principal signal is received.

Several forms of adaptive equalizer are known. The adaptive equalizer can be a finite-impulse-response (FIR) digital filter formed from a several-bit-wide digital shift register a few hundred stages in length and a respective 4-quadrant digital multiplier for each stage to weight the contents of that stage by respective kernel weight for inclusion in a weighted summation. However, since many of the kernel weights are of negligible value, such a straightforward approach is wasteful of digital hardware. Adaptive equalizers currently preferred by many persons skilled in the art incorporate cascades of digital filters with specialized functions, such as the cancellation of pre-ghosts occurring a substantial number of microseconds before the principal signal, the cancellation of post-

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This application is a 371 of PCT/US99/10290 filed May 11,1999,  
which claims benefit of serial number 60/085,064 filed May 12,1998,  
which claims benefit of serial number 60/089,882 filed June 19,1998,  
which claims benefit of serial number 60/103,470 filed October 8,1998,  
which claims benefit of serial number 60/120,638 filed February 18,1999.